INFORMATION SHEET

ORDER NO. R5-2007-____
CITY OF KERMAN
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

TENTATIVE ORDER

Background
The City of Kerman (Discharger or City) operates a wastewater collection, treatment, and disposal facility (WWTF) for the residents and small industry of the City of Kerman. The WWTF has an average daily flow of 1.2 million gallons per day (mgd).

The Discharger submitted a report of waste discharge (RWD) dated 9 May 2007 in support of a modification and expansion (hereafter Expansion Project) of the City WWTF. The existing WWTF provides secondary treatment of the wastewater stream. Treatment includes screening to remove large solids, aeration, and sedimentation. Effluent is discharged to approximately 5 acres of unlined settling ponds, followed by 9.5 acres of unlined evaporation/percolation ponds (Disposal Ponds).

Waste Discharge Requirements (WDRs) Order No. 5-00-050, adopted by the Regional Water Board on 17 March 2000, limits the discharge flow to 1.2 million gallons per day (mgd). The WDRs also establish monthly average and daily maximum limits for settleable solids (SS) of 0.2 mL/L and 0.5 mL/L, biochemical oxygen demand (BOD) of 40 mg/L and 80 mg/L, and total suspended solids (TSS) of 40 mg/L and 80 mg/L, respectively. WDRs Order No. 5-00-050 does not reflect the configuration of the Expansion Project.

The Expansion Project consists of a new Biolac System©, which is an extended aeration treatment process that incorporates nitrogen removal. The Expansion Project will also include modification to the headworks, new sludge handling and storage facilities, modification of existing aeration lagoons and ponds, and construction of new disposal ponds.

Solids and Biosolids Disposal
Screenings from the headworks are placed in a dumpster prior to disposal at an offsite landfill. Previously, the City did not remove accumulated solids from the disposal ponds, but instead occasionally drained and dried the ponds and disked the accumulated sludge in the pond bottom soils. The City has ceased this method due to the potential for oxygen demanding substances, metals and nitrogen to leach and unreasonably degrade groundwater. The City now drains the ponds and removes the sludge for offsite disposal.

In February 2001, the City was issued a Notice of Intent for the application of approximately 700 cubic feet of biosolids on City-owned property planted in almonds to the west of the WWTF. The City still has approximately 1,000 cubic feet of biosolids that are being stockpiled onsite.

The City has not completed the design of the sludge handling and storage facilities for the Expansion Project, but intends to construct reinforced concrete sludge drying beds for drying sludge in the summer, and a mechanical dewatering system for during the winter.

Groundwater Conditions

Regional groundwater flows south-southwesterly and the depth of water occurs about 90 feet below ground surface (bgs), according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2004. An 80-foot thick modified E-clay layer occurs about 500 to 550 feet bgs. Generally, water quality is better in the confined aquifer below the E-clay. However, elevated uranium concentrations have resulted in the City drilling additional drinking water wells to meet the primary maximum contaminant levels (MCL) specified in Title 22 of California Code of Regulations (CCR). Most domestic wells in the area are perforated below the E-clay, but some irrigation wells within the immediate vicinity of the WWTF are likely perforated above and below the E-clay to maximize well production.

In 2002, the City began monitoring groundwater in three wells (MW-1 through MW-3) at the WWTF. Groundwater is not characterized in the area of the new Disposal Ponds to the west of the WWTF. The upgradient well (MW-1) is much higher in EC, chlorides, and metals than the dowgnradient wells (MW- 2 and MW-3). The upgradient well (MW-1) may not represent true background conditions.

One of the downgradient wells (MW-3) exhibits higher concentrations of total organic carbon (TOC) compared to MW-1, based on results from one sampling round. Also, nitrate and sulfate in downgradient wells (MW-2 and MW-3) were lower than the upgradient well (MW-1). Further, arsenic in one downgradient well (MW-3) exceeded the primary MCL of 10 µg/L, but arsenic in the upgradient well (MW-1) was only about 3.9 µg/L. The amount of data is too limited to draw definitive conclusions but the groundwater downgradient of the effluent disposal ponds may be in reduced conditions.

Compliance History

The Discharger consistently exceeds the effluent limitations for BOD_5, and TSS specified in WDRs Order No. 5-00-050. Discharger self monitoring reports (SMRs) from April 2006 through March 2007 show the City exceeded the monthly average BOD and TSS effluent limit of 40 mg/L each 9 months of the months reviewed. Table 1 summarizes the effluent BOD and TSS concentrations from those months.

TABLE 1. Effluent Quality

Month	BOD (mg/L)	TSS (mg/L)	Month	BOD (mg/L)	TSS (mg/L)	Month	BOD (mg/L)	TSS (mg/L)
Apr-06	29	18	Aug-06	32	**49**	Dec-06	**51**	**51**
May-06	33	30	Sep-06	26	**49**	Jan-07	**66**	**70**
Jun-06	22	39	Oct-06	**59**	**54**	Feb-07	**45**	**49**
Jul-06	**42**	**65**	Nov-06	**63**	**56**	Mar-07	**41**	**51**

Bolded values note violations of the effluent limit

In addition, the City exceeded the settleable solids monthly average limit of 0.2 mL/L in July 2006, and the BOD daily maximum limit of 80 mg/L in May and June 2006, and the TSS daily maximum limit of 40 mg/L in May, June, August and October 2006. A Notice of Violation (NOV) was issued 8 May 2007 for the above violations. The upgrade and expansion of the WWTF should address violations of the effluent limits.

The Discharger also did not submit a technical report characterizing background groundwater quality as required by Provision E.6 of WDRs Order No. 5-00-050. The proposed WDRs include a provision to complete this requirement.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Basin Plan indicates the greatest long-term problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. The Regional Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 µmhos/cm as a measure of the maximum permissible addition of salt constituents through use.

Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16 (Resolution 68-16), "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policy and procedures for complying with this directive are set forth in the basin plan.

Constituents typically elevated in domestic wastewater threaten the beneficial uses of groundwater if not adequately controlled by a treatment process or attenuated in the soil profile prior to discharge to first encountered groundwater. Discharges that rely on percolation for disposal may result in the percolation of excess organic carbon, and the mobilization of other constituents.

The discharge from the Expansion Project will likely not degrade the beneficial uses of groundwater because:

a. For salinity, the Basin Plan contains effluent limits (EC of the source water plus 500 µmhos/cm, or a maximum of 1,000 µmhos/cm) that considered Resolution 68-16. The discharge meets these limits and therefore consistent with Resolution 68-16.

b. For nitrogen, if it could affect the beneficial uses of a high quality water, practicable measures to protect the high quality water are: 1) treating the effluent such that it is below objectives for drinking water, or 2) storing the effluent in a manner that protects the underlying groundwater from percolation from ponds until it can be beneficially used on crops. The Discharger proposes implementing treatment technology that will result in an effluent total nitrogen concentration of less than 10 mg/L, which should preclude unreasonable degradation of groundwater for nitrate.

Treatment Technology and Control
The Expansion Project will provide treatment and control of the discharge that incorporates:

a. Secondary treatment of the wastewater;
b. A nitrogen reduction process;
c. Appropriate biosolids storage and disposal practices;
d. An Operation and Maintenance (O&M) manual; and
e. Certified operators to ensure proper operation and maintenance.

Title 27
Title 27, CCR, section 20005 et seq. (Title 27) contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent in a classified waste is acceptable under Title 27 regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27. Treatment and storage facilities for sludge that are part of the WWTF are considered exempt from Title 27 under section 20090(a), provided that the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed Order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g., grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the municipal discharge of effluent and the operation of treatment or storage facilities associated with a municipal wastewater treatment plant can be allowed without requiring compliance with Title 27, but only if resulting degradation of groundwater is in accordance with the Basin Plan.

CEQA
The Discharger certified in 1993 a General Plan that evaluates the potential environmental impacts resulting from the development of the City through 2013. The 1993 General Plan

does not identify the wastewater discharge flow resulting from population growth or the potential environmental impacts from the discharge of wastewater. The Discharger certified on 6 September 2000 a negative declaration for annexation of 80 acres adjacent to the WWTF for effluent disposal, which the City later purchased. The Regional Water Board, as a responsible agency under CEQA, has reviewed the General Plan and negative declaration. To mitigate the Expansion Project's groundwater quality impacts to less than significant levels, the terms and conditions of this proposed Order and accompanying enforcement order are appropriate and necessary.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions
The proposed Order prohibits discharge to surface waters and water drainage courses.

The proposed Order would carry over the current Order's monthly average daily discharge flow limitation until the City completes the Expansion Project. The proposed Order would carry over the previous Order's effluent limits for 5-day biological oxygen demand (BOD_5) of 40 mg/L (monthly average), and 80 mg/L (daily maximum). These limitations are based on Basin Plan minimum performance standards for municipal facilities. The advanced secondary treatment technology being implemented, as part of the Expansion Project will result in an effluent of much higher quality than that reflected in the effluent limitations set forth in the WDRs.

The proposed Order would establish an effluent limitation for EC that reflects the Regional Water Board policy for managing the salts within the Tulare Lake Basin.

The discharge requirements regarding dissolved oxygen and freeboard are consistent with Regional Water Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The proposed WDRs would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedances of these objectives or natural background water quality, whichever is greater.

The WDRs would require the City assess the existing groundwater monitoring well network and propose the installation of additional wells (e.g., background, within the influence of the new evaporation/percolation ponds, etc.), as appropriate. The WDRs would also carry over the provision from the existing WDRs that requires the City to submit a report characterizing background groundwater quality and determine compliance with groundwater limitations. The WDRs would also require the Discharger assess its discharge on a constituent-by-constituent basis for consistency with Regional Water Board plans and policies, including Resolution No. 68-16. This assessment would identify those constituents that threaten the beneficial uses of groundwater. This may result in the WDRs being reopened and additional or modified effluent limitations imposed.

Monitoring Requirements
Section 13267 of the CWC authorizes the Regional Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years there has been an increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes influent and effluent monitoring requirements, pond monitoring, groundwater monitoring, sludge monitoring, water supply monitoring, and septage monitoring. The monitoring is necessary to evaluate groundwater quality and the extent of the degradation from the discharge.

The Discharger must monitor groundwater for constituents present in the discharge that are capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate. For constituents listed in Section F, Groundwater Limitations, of the WDRs, the Discharger must, as a part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentrations or to prescribed numerical limitations to determine compliance.

The proposed Order does not require the Discharger to monitor total coliform organisms (TCO) in the effluent and groundwater. Given the existing site-specific conditions, it is unlikely that the presence of pathogens resulting from groundwater monitoring is a result of the percolation of wastewater. The presence of pathogens in groundwater would likely occur from compromises in the monitoring well's construction. The proposed Order may be re-opened or additional groundwater monitoring required if site conditions warrant.

Reopener
The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. The proposed Order would set limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.

Proposed Enforcement Order

The Discharger cannot comply with the effluent limitations of the existing Order and proposed Order due to lack of treatment and disposal capacity. Once the Expansion Project is complete, the Discharger should be able to comply with the terms and conditions of the proposed Order. An accompanying draft Cease and Desist Order would require the Discharger to perform a series of tasks according to a time schedule to complete the Expansion Project. It would also require the City to remove the existing stockpiles of biosolids.

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